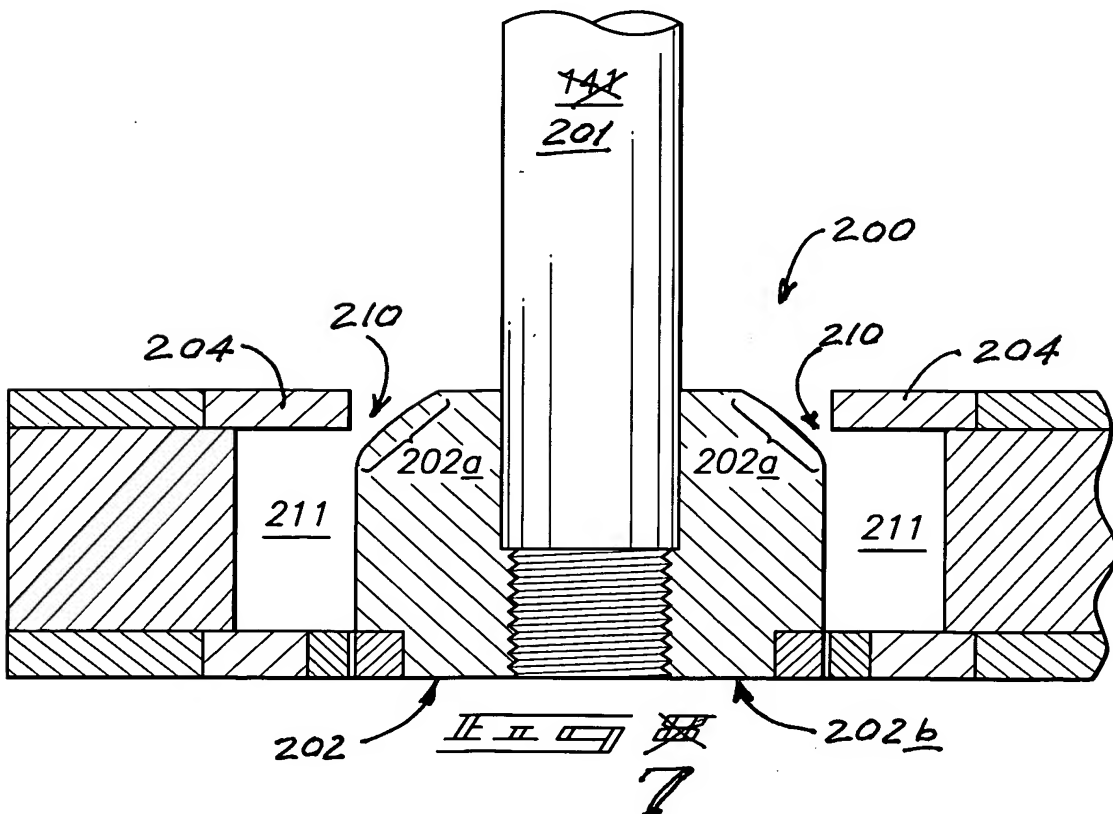
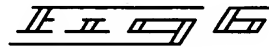
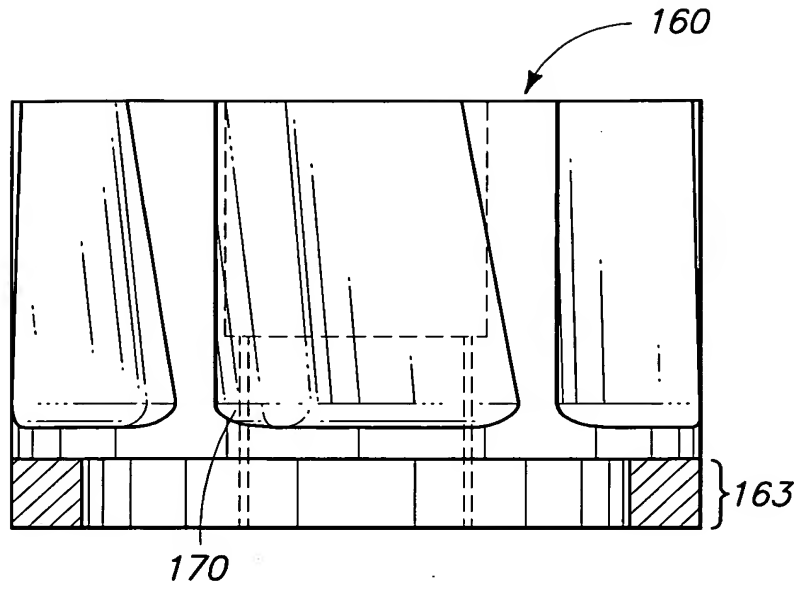
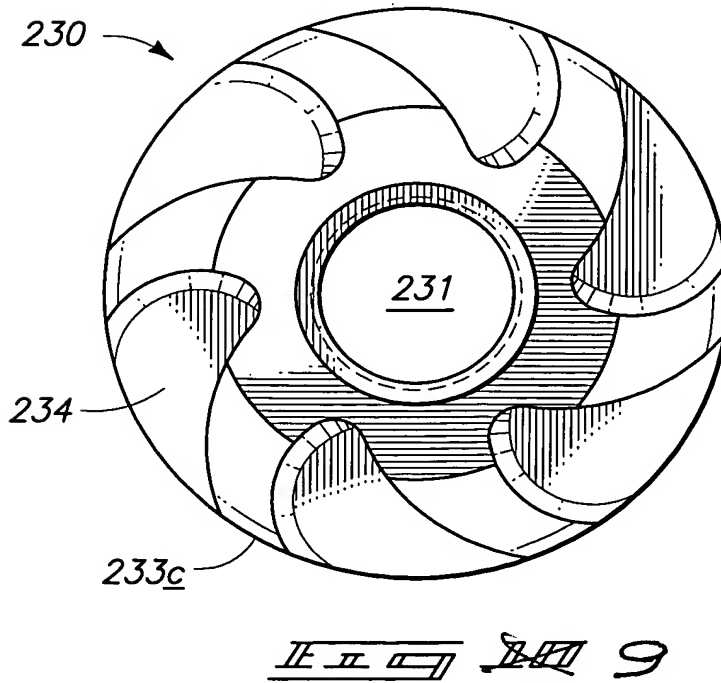
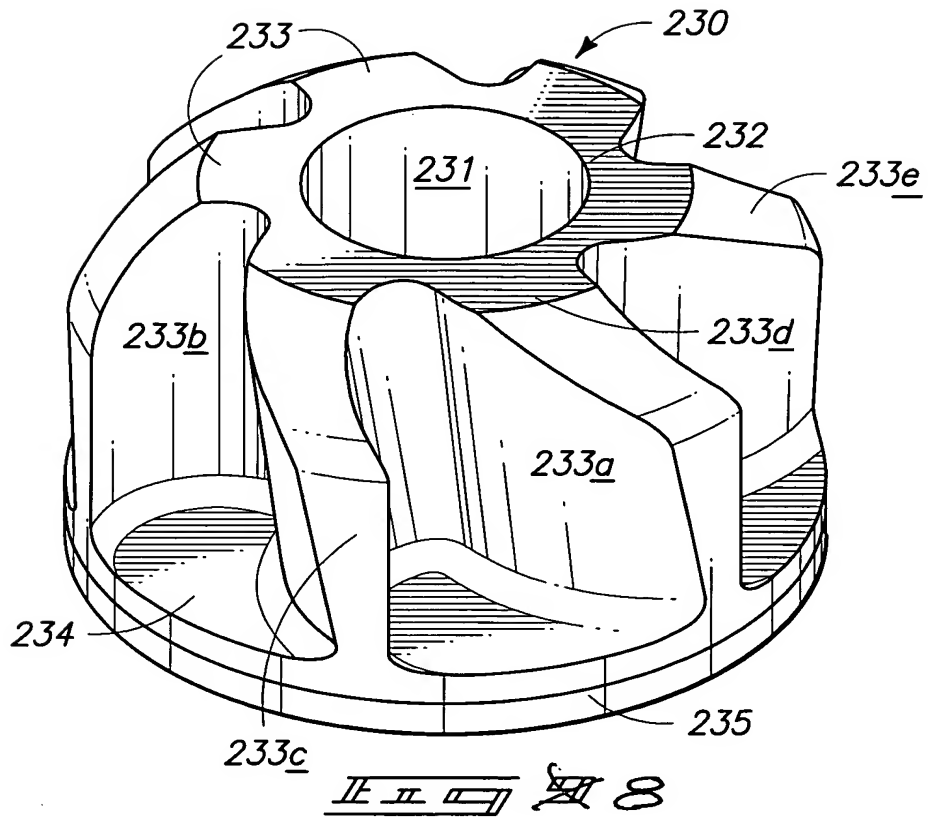


APPENDIX

1. Annotated Sheets Showing Changes – Pages 1 through 8 (Figures 1-15).
2. Replacement Sheets – Pages 1 through 8 (Figures 1-14).
3. Information Disclosure Statement document filed 10/26/05.
4. Preliminary Amendment and Information Disclosure Statement documents filed 1/2/04.





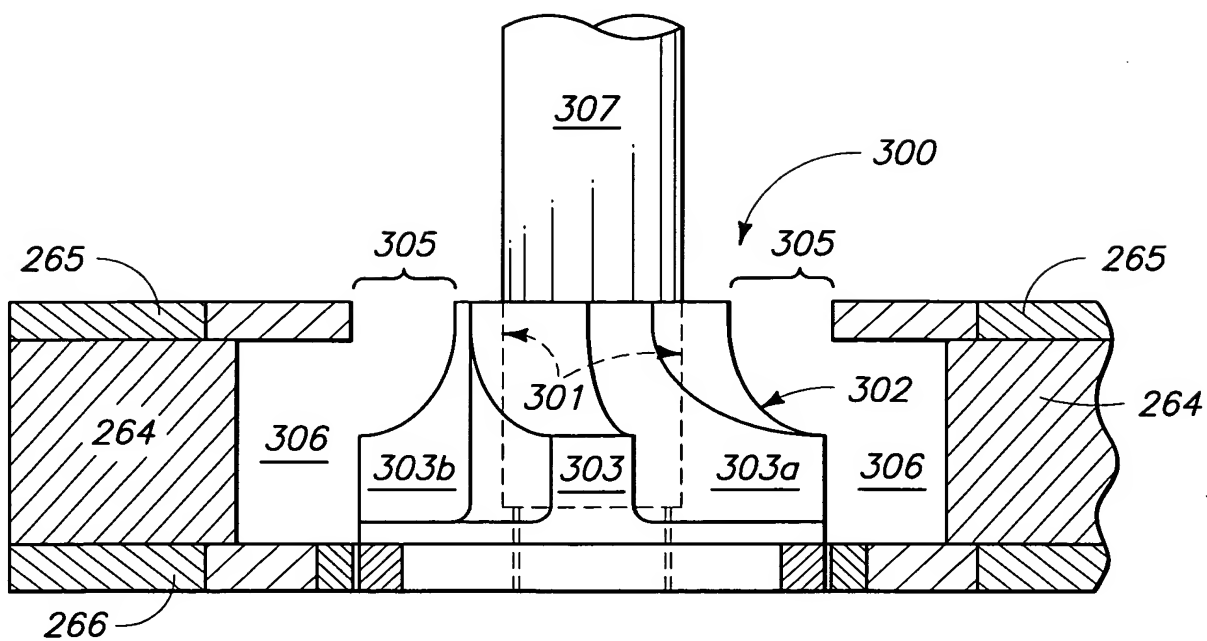
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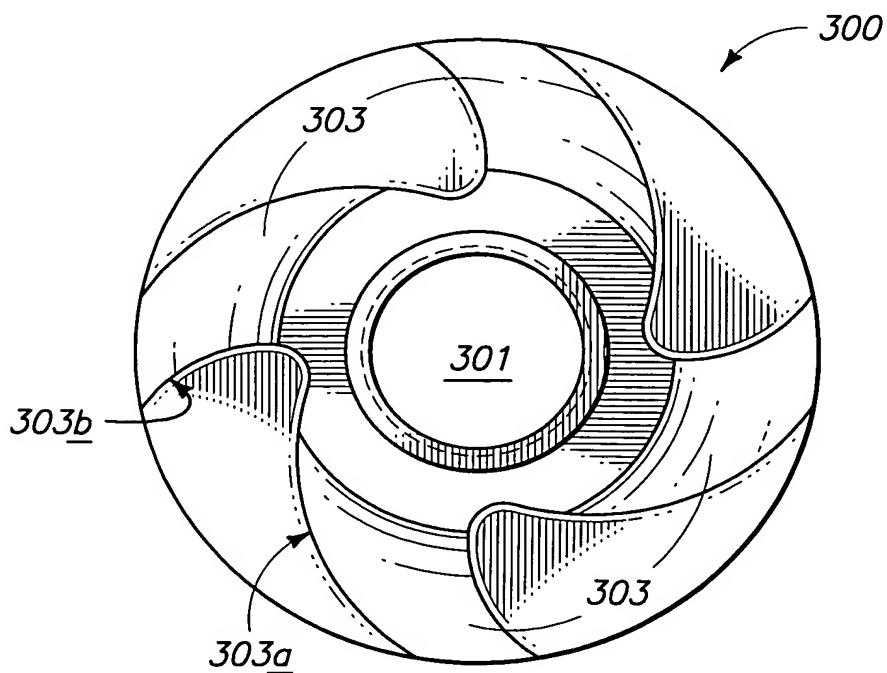


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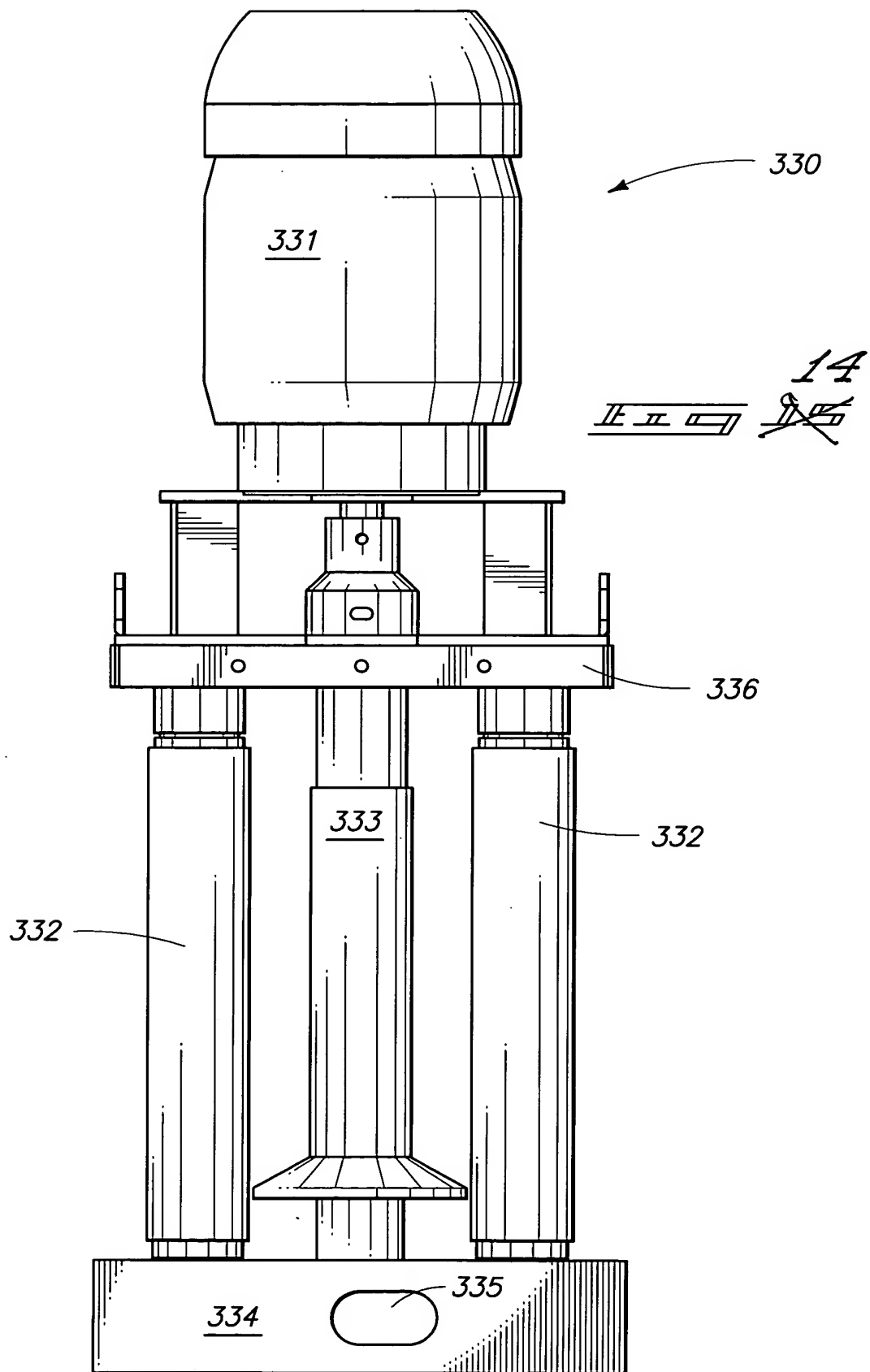
7/8



~~FIG. 12~~



~~FIG. 13~~



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No. 10/047,198
 Filing Date October 26, 2001
 Inventor Gilbert et al.
 Assignee Pyrotek, Inc.
 Group Art Unit 3745
 Examiner Patricia Faison-Ball
 Attorney Docket No. PY2-023
 Title Molten Metal Pump Particle Passage System

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Pyrotek, Inc.

1-2-04

The stamp of the U.S. Patent and Trademark Office acknowledges receipt of the following papers relating to the Patent application of **E. Gilbert et al.**, Serial No. **10/047,198**, filed October 26, 2001, entitled "**Molten Metal Particle Passage System**".

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	Filing Date	October 26, 2001
	First Named Inventor	Ronald E. Gilbert
	Group Art Unit	3745
	Examiner Name	Patricia Faison-Ball
Total Number of Pages in This Submission		Attorney Docket Number PY2-023

ENCLOSURES (check all that apply)		
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		Filing Date	October 26, 2001
		First Named Inventor	Ronald E. Gilbert
		Examiner Name	Patricia Faison-Ball
		Group / Art Unit	3745
		Attorney Docket No.	PY2-023
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2. EXTRA CLAIM FEES Total Claims <u>15</u> - 20** = <u>0</u> x <u>84</u> = <u>0</u> Independent Claims <u>4</u> - 3** = <u>1</u> x <u>84</u> = <u>84</u> Multiple Dependent _____ x _____ = <u>0</u> **or number previously paid, if greater; For Reissues, see below		SUBTOTAL (1) (\$ 0.00)																																																																																																																					
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Signature	<i>Mark W. Hendricksen</i>	Telephone	509-624-4276
		Date	1-2-04

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Inventors: Ronald E. Gilbert et al.

Title: MOLTEN METAL PUMP PARTICLE PASSAGE SYSTEM

Assignee: Pyrotek, Inc.



INFORMATION DISCLOSURE STATEMENT

References -- See Attached Form PTO-1449

REMARKS

The citations listed, copies attached, may be material to the examination of the subject application and are therefore submitted in compliance with the duty of disclosure defined in 37 CFR §1.56. The Examiner is requested to make these citations of official record in this application. No admission is made regarding whether all the submitted references are prior art.

The materials cited are presented to assist in and expedite examination of this application. The present invention is considered to be patentable over the cited materials. Expeditious examination and allowance of this application as a patent are therefore urged in order that the public may benefit from the disclosure and commercialization of the invention.

Respectfully submitted,

Date: 10-26-01Inventor: Ronald E. Gilbert
Ronald E. GilbertDate: 10/26/01Inventor: Mark A. Palmer
Mark A. PalmerDate: 10/26/01Attorney: Mark W. Hendricksen
Mark W. Hendricksen
Reg. No. 32,356

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LIST OF ART CITED BY APPLICANT
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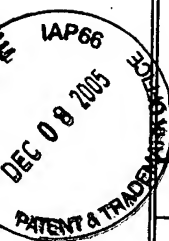
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	AR		PCT Application No. WO 98/25031, Applicant and Inventor: COOPER
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Serial No. 10/047,198
 Filing Date October 26, 2001
 Inventor Gilbert et al.
 Assignee Pyrotek, Inc.
 Group Art Unit 3745
 Examiner Patricia Faison-Ball
 Attorney's Docket No. PY2-023
 Title Molten Metal Pump Particle Passage System

PRELIMINARY AMENDMENT

To: Commissioner for Patents
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 Alexandria, VA 22313-1450

VIA EXPRESS MAIL

From: Mark W. Hendricksen (Tel. 509-624-4276; Fax 509-838-3424)
 Wells St. John P.S.
 601 West First Avenue, Suite 1300
 Spokane, WA 99201-3828

Please enter the following amendments prior to examining the above-identified application.

AMENDMENTS

In the Claims

Claim 1 (original) A molten metal pump system comprising:

a pump framework;

a pump motor mounted on the pump framework;

a pump base attached to the pump framework, the pump base including an
impeller aperture with interior walls;

an impeller shaft attached to the pump motor;

an impeller body attached to the impeller shaft and at least partially within
the impeller aperture in the pump base, the impeller body comprising:

a center portion with a shaft aperture therein;

a plurality of vanes extending outward from the center portion, each
vane including a radially outward end, an input side, and an
output side; and

wherein a particle relief passageway is defined between the radially outward
end of the plurality of vanes on the impeller and the interior walls of
the impeller aperture, the particle relief passageway being a
predetermined size to allow particles of a predetermined size to pass
between the plurality of vanes and the interior walls of the impeller
aperture of the pump base.

Claim 2 (original) A molten metal pump system as recited in claim 1, and
further wherein the impeller body is wholly within the impeller aperture
in the pump base.

Claim 3 (original) A molten metal pump system comprising:

a pump framework;

a pump motor mounted on the pump framework;

a pump base attached to the pump framework, the pump base including an
impeller aperture with interior walls;

an impeller shaft attached to the pump motor;

an impeller body attached to the impeller shaft and at least partially within
the impeller aperture in the pump base, the impeller body comprising:

a center portion with a shaft aperture therein;

a plurality of vanes extending outward from the center portion, each
vane including a radially inward end, a radially outward end, an
input side, an output side, a leading surface, a trailing surface, a
vane width between the leading surface and the trailing surface;
the plurality of vanes being tapered at the input side from the
radially inward end to the radially outward end, thereby creating
a shoulder on the radially outward end of the plurality of vanes;
and

wherein a predetermined particle relief passageway is defined between the
plurality of vanes on the impeller, the predetermined partial relief
passageway being sized to allow particles of a predetermined size to
pass between the plurality of vanes and the interior walls of the
impeller aperture of the pump base.

Claim 4 (original) A molten metal pump system as recited in claim 3, and further wherein the impeller body is wholly within the impeller aperture in the pump base.

Claim 5 (new) A molten metal pump impeller system comprising:
an impeller body comprising:

a center portion with a shaft aperture therein;

a plurality of vanes extending outward from the center portion, each vane including a radially inward end, a radially outward end, an input side, an output side, a leading surface, a trailing surface, a vane width between the leading surface and the trailing surface;
and

wherein the vane width is tapered from the input side to the output side.

Claim 6 (new) A molten metal pump impeller system as recited in claim 5, and further comprising an annular base at the output side of the plurality of vanes.

Claim 7 (new) A molten metal pump impeller system as recited in claim 6, and further wherein the entire vane width is tapered from the input side to the annular base.

Claim 8 (new) A molten metal pump impeller system as recited in claim 5,
and further wherein the input side is the vertically upward side.

Claim 9 (new) A molten metal pump impeller system as recited in claim 5,
and further wherein the plurality of vanes are tapered at the input side
from the radially inward end to the radially outward end, thereby
creating a shoulder on the radially outward end of the plurality of
vanes.

Claim 10 (new) A molten metal pump impeller system as recited in claim 5,
and further wherein the leading surface is convex.

Claim 11 (new) A molten metal pump impeller system comprising:
an impeller body comprising:

- a center portion with a shaft aperture therein;

- a plurality of vanes extending outward from the center portion, each
vane including a radially inward end, a radially outward end, an
input side, an output side, a leading surface, a trailing surface, a
vane width between the leading surface and the trailing surface;
and

- wherein the leading surface is convex.

Claim 12 (new) A molten metal pump impeller system as recited in claim 11,
and further comprising an annular base at the output side of the
plurality of vanes.

Claim 13 (new) A molten metal pump impeller system as recited in claim 12,
and further wherein the entire vane width is tapered from the input
side to the annular base.

Claim 14 (new) A molten metal pump impeller system as recited in claim 11,
and further wherein the input side is the vertically upward side.

Claim 15 (new) A molten metal pump impeller system as recited in claim 11,
and further wherein the plurality of vanes are tapered at the input side
from the radially inward end to the radially outward end, thereby
creating a shoulder on the radially outward end of the plurality of
vanes.

REMARKS

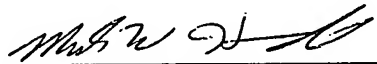
Claims 5-15 are added. Claims 1-15 are in the application for consideration.

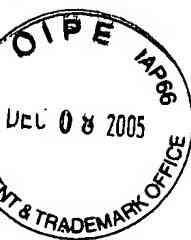
Applicant is hereby submitting the attached Preliminary Amendment to the application, along with a Supplemental Information Disclosure Statement for consideration by the Examiner. No new matter is added and there is complete support in the Specification for the additional claims.

This application is believed to be in immediate condition for allowance, and action to that end is requested.

Respectfully submitted,

Dated: 1-2-04

By: 
Mark W. Hendricksen
Reg. No. 32,356



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application Serial No. 10/047,198
Filing Date October 26, 2001
Inventorship Gilbert et al.
Assignee Pyrotek, Inc.
Group Art Unit 3745
Examiner Patricia Faison-Ball
Attorney's Docket No. PY2-023
Title Molten Metal Pump Particle Passage System

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT


References - See Attached Form PTO-1449

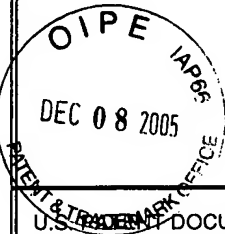
In compliance with 37 C.F.R. §§ 1.56, 1.97 and 1.98, your attention is directed to the United States patents and other references listed on the attached Form PTO-1449. Copies of the cited art are attached hereto. No admission is made regarding whether all the submitted references are prior art.

This Supplemental Information Disclosure Statement is being filed within three months of the filing date of the application or before the mailing of a first Office Action on the merits, whichever occurs last. Therefore, no fee is believed to be required. However, in the event that a fee is required for filing this Supplemental Information Disclosure Statement, please charge the fee specified under 37 C.F.R. § 1.17(p) to Deposit Account No. 23-0925.

Respectfully submitted,

Dated: 1-3-04

By: 
Mark W. Hendricksen
Reg. No. 32,356

Form PTO-1449		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. PY2-023		SERIAL NO. 10/047,198	
<div style="display: flex; align-items: center;"> <div style="text-align: center; margin-right: 10px;">  </div> <div> <p>LIST OF ART CITED BY APPLICANT (Use several sheets if necessary)</p> </div> </div>				APPLICANT: Gilbert et al.			
				FILING DATE October 26, 2001		GROUP 3745	

U.S. PATENT DOCUMENTS							
*Examiner's Initials	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
	AA	5,470,201	11/28/95	Gilbert et al.			
	AB	5,634,770	06/03/97	Gilbert et al.			
	AC	5,944,496	08/31/99	Cooper			
	AD	6,468,039 B1	10/22/02	Lehman			
	AE						
	AF						
	AG						
	AH						
	AI						

FOREIGN PATENT DOCUMENTS							
	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No
	AJ						
	AK						
	AL						

OTHER REFERENCES (including Author, Title, Date, Pertinent Pages, Etc.)		
	AM	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

EV 633263195



PTO/SB/21 (09-04)

Approved for use through 07/31/2006. OMB 0651-0031

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(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/047,198
Filing Date	October 26, 2001
First Named Inventor	Gilbert et al.
Art Unit	3745
Examiner Name	Ninh H. Nguyen
Attorney Docket Number	PY5-010

ENCLOSURES (Check all that apply)

<input type="checkbox"/> Fee Transmittal Form <input checked="" type="checkbox"/> Fee Attached <input checked="" type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input checked="" type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD	<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Return Receipt Postcard. Check #148625 for \$120.00.
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Remarks

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Wells St. John P.S.		
Signature			
Printed name	Mark W. Hendricksen		
Date	12-8-05	Reg. No.	32,356

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